HOW TO REPAIR COMPUTER MOTHERBOARD

MOTHERBOARD NOT BOOT

a. check whether the short circuit CPU voltage
b. MOS tube 5V and 3V voltage is normal
c. check motherboard VID0-VID5 signal
d. 12V Power Management Chip 0 ohm affect, MOS capacitor for the wrong side of the tube will affect the voltage
e. VID_GOOD signal
2. No clock
a first check the clock chip 2.5V and 3.3V power supply is normal
b 14.318MHZ whether the starting crystal oscillator, capacitor bad or adverse affect body vibration can not afford to
c check the clock chip VTT_PWRGD (intel chipset)
3-d clock chip resistor
e bad body clock chip
DIMM on the clock:
A check whether the output clock frequency chips to North Bridge
Check the power supply 2 DIMM and 2 .. 5V 1.25V is normal (next to the reference voltage 1.25V Northbridge is normal)
3. DIMM clock chip is bad
4 North Bridge to the clock chip 22 ohm is normal
5. Northbridge poor body
3. CPU reset signal
a. check whether the normal voltage and frequency. (DIMM easily under a bad transistor)
b. clock chip resistance, exclusion is normal
c. North Bridge to the DIMM frequency output is normal. (INTEL. VIA. SIS chipset, the aforesaid signal line is working
d. North Bridge to the CPU signal lines AD Block
e. SIS PCI board investigation of FRAME # and DEVSEL # signal, if the normal two signals can be ruled out BIOS and
W83697 possible, the network will also affect the North Bridge chip and
f. NVIDIA's board BIOS and W83697 will affect not reset
g. North Bridge Ontology bad (NVIDIA and the SIS board, BIOS will not affect the CPU reset)
4. The whole board without reset
a check whether basic supply voltage and frequency of normal
b check whether the output reset signal to the Southbridge MS_5T 2 feet (3V reset voltage)
c check MS-5 3.4.5-pin voltage is normal, with or without short-circuit
d South Bridge is poor body
e check switch on the FP-RST signal is connected to a 3V voltage general MS-5, clock, network chips, MS-3
f check MS-5 in the POWER GOOD 42 feet and PWR-OK 46-pin signal is normal
g check MS-7 in the first 4 feet and 7 feet POWERGOOD signals whether the output signal 4 into POWERGOOD 7
Out check VCC2.5V and whether the short-circuit short-circuit the Northbridge 1.25V bad

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5 reset does not boot
a. clock. reset. Southbridge voltage is normal
b. Charles PW-OK, and PWR-GOOD signal is normal
c. TTL circuits and related components, check whether the abnormal
d. check the AD PCI signal and control signal to the South Bridge
e. South Bridge poor body
f. South Bridge side of the frequency of the crystal 32.768K less will affect the reset does not open, will also affect the COM port test, but
g. MS-3 is normal
h. NVIDIA chipset, BIOS is bad
7 Delay start
a. clock frequency, voltage is normal
b. clock chip side of the resistance, exclusion, with or without frequency output
c. TTL circuits and MS-5, MS-7 is related to the normal line
d. network chip voltage is normal or poor body
e. BIOS to the South Bridge, the signal is normal
8 reset Boot
a. check whether the bad BIOS information
b. check reset, whether the low frequency
c. check FP-RST signal and related components are normal
d. PCI lines are normal to the South Bridge
e. South Bridge Ontology bad run DD
a. check PCI bus
b. check BIOS Bus
c. check CPU bus
d. BIOS poor body
e. I / O chip
f. Clock Chip
g. MS-3
h. South Bridge run D3
a. Clear CMOS
b. update BIOS information
c. whether the connection is bad memory
d. motherboard memory power supply is normal DIMM3.3V, DDR2.5V 1.25V
e. check the memory frequency
f. check MS.MD.RAS.CAS
g. check the AD CPU signal. control line

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h. check 74F244.74F245 buffer board 370
i. check I / O chip
j. check the memory to the North Bridge of the signal line, the memory on the 91 and 92 feet of potential signal 3V, through live I / O clock, Southbridge best Huabu Kai machine
a. check CMOS settings are consistent with the CPU itself, the frequency
b. check CPU multiplier signal (4 signals directly to the South Bridge)
c. check the voltage settings are normal
d. check CPU's control signals]
e. check clock chip power supply. output frequency is normal
f. check MS-3 (next to the power transistor, the voltage down)
Short-circuit board
1. Observation
2. Touch method
3. Exclusion
4. From small range to large-scale
5. A signal line North Bridge voltage 5V, 3.3V, 2.5V, 1.8V, DDR-VTT, VCORE, VCC-AGP, VTT-VID
South Bridge Voltage 3.3V, 25V, 1.8V, 1.5V, 3VSB
I / O 5V, 3.3V, 5VSB
BIOS 3.3V, 5V
Audio chip 3.3V, 5V 8738 is 5V
Network chip 3.3V, 3VSB
Power management chip 12V, 5V, VCORE
Clock 3.3V, 2.5V
75,232 plus or minus 12V, 5V
South Bridge PCI on 14PIN have 3VSB
For the short-circuit boards to repair
a search of all AD board signal lines, including (CPU Block, PCI, DIMM, ISA)
b. other control signals and clock chip, the clock chip output pin, all the I / O interface signals and diodes are normal (resistance)
CPU voltage anomalies to maintenance
a. first check CPU voltage, power management ICs and MOS tube a short circuit and burn out phenomenon
b. check the signal is normal VID0-VID5

Three main points of the motherboard repair

1, **non-maintenance of electricity**
1, Southbridge (electricity) 1, Southbridge (electricity)
2, I / O (power supply) 2, I / O (Power)
3, the door circuit (VCC) 3, the door circuit (VCC)
4, XY (both ends voltage) 4, XY (both ends voltage)
5, COMS battery 5, COMS battery
6, Jump (jumper cap) 2.5V-3.3V 6, Jump (jumper cap) 2.5V-3.3V
7, Power-on is not level transistor 5V 7, Power-on is not level transistor 5V
8, 5VSB 8, 5VSB
9, power-on 9, power-on
Second, **no reset of maintenance Second, no reset of maintenance**
1, check the clock chip's power supply 3.3-2.5V, inductor or greater than the amount of around 0 Ohm resistor. 1, check the clock chip's power supply 3.3-2.5V, inductor or greater than the amount of around 0 Ohm resistor.
2, the amount of 14.318 crystal work is normal, in turn, the amount of two feet, voltage 1.5-1.6V. 2, the amount of 14.318 crystal work is normal, in turn, the amount of two feet, voltage 1.5-1.6V.
3, Power-ok there is no 5V voltage, if not, check the circuit along the line. 3, Power-ok there is no 5V voltage, if not, check the circuit along the line.
4, the amount of South Bridge, the clock signal is normal, the amount of 330,220,110 next to the voltage 1.6V. 4, the amount of South Bridge, the clock signal is normal, the amount of 330,220,110 next to the voltage 1.6V.
5, Southbridge power supply to normal, the amount of MOS, 1117 have 3.3 or 5V supply. 5, Southbridge power supply to normal, the amount of MOS, 1117 have 3.3 or 5V supply.
6, the amount of 32.768 crystal is normal intel 0.5V VIA 1.5V. 6, the amount of 32.768 crystal is normal intel 0.5V VIA 1.5V.
7, the amount of reset switch on the voltage is 3.3V or 5V, if there is no voltage, check along the switching line, generally leads to two gates, or gate leading to a foot, another foot leading to gate. 7, the amount of reset switch on the voltage is 3.3V or 5V, if there is no voltage, check along the switching line, generally leads to two gates, or gate leading to a foot, another foot leading to gate.
8, detection gate voltage of 3.3V-5V. 8, detection gate voltage of 3.3V-5V.
9, the amount of PCI, AGB, IDE, I / O reset pin to ground are not shorted. 9, the amount of PCI, AGB, IDE, I / O reset pin to ground are not shorted.
10, the amount of Vcore are normal. 10, the amount of Vcore are normal.
11, the amount of ATX Power Supply 3.3V, 12V, 5V are normal. 11, the amount of ATX Power Supply 3.3V, 12V, 5V are normal.
3, **FF maintenance 3, FF maintenance**
1, in the voltage of each group under normal circumstances, the amount of each bus-to-ground resistance. 1, in the voltage of each group under normal circumstances, the amount of each bus-to-ground resistance.
2, CPU to the North bridge 32 address lines, 64 data lines to-ground resistance 350-750. 2, CPU to the North bridge 32 address lines, 64 data lines to-ground resistance 350-750.
3, South Bridge to the North Bridge-to-ground resistance 350-750. 3, South Bridge to the North Bridge-to-ground resistance 350-750.
4, South Bridge to the AD line of PCI-to-ground resistance should be the same. 4, South Bridge to the AD line of PCI-to-ground resistance should be the same.
5, the amount of BIOS, clock, reset, AD line. 5, the amount of BIOS, clock, reset, AD line.
6, brush BIOS. 6, brush BIOS.
7, the clock IC power supply. 7, the clock IC power supply.
8, memory, power supply. 8, memory, power supply.

Motherboard failure and Maintenance Basics

A key component of the motherboard is the computer used to connect a variety of computer equipment, the computer plays a vital role. If the board fails, your computer can not properly used. At present more and more integrated motherboard, motherboard repair has become increasingly difficult, often using specialized digital testing equipment to complete, but the control board and comprehensive maintenance technology, the rapid failure investigation board is still very necessary.

1, causing the main board failure

Today, the integrated motherboard components and circuitry are many and complex reasons for the resulting failure is also relatively high. Common board failures caused by many environmental bad, but because of quality problems caused by the motherboard's own failure also relatively more, while some of the problems are caused by human users.

1, motherboard adverse operating environment

If the board covered with dust, can cause short-circuit and other signal failure. If the power supply is damaged, or the power grid voltage transient spikes generated pulses will cause the motherboard chip near the power supply plug is damaged, causing the motherboard failure; In addition, often caused by static electricity on the motherboard chipset (especially CMOS chip) is the breakdown, causing failures .

2, the motherboard itself, quality issues

As the chip on the motherboard and other components of poor quality, the use of aging over time will damage the device, leading to the motherboard failure.

3, human error

Hot-swappable hardware is very dangerous, and many motherboard failures are caused by hot, the most common is the burning of the keyboard, mouse port, a serious motherboard will be burned. Charged pluggable I / O card, board and plug in installed when the forceimproperly, can result in interfaces, chips damage.

2, motherboard repair method commonly used in
Motherboard fault identification, usually through the progressive removal or replacement of the motherboard is connected to the board, first rule out the possible problems of these components, you can target lock on the motherboard. The actual maintenance, frequently used repair methods listed below.

1, observation
Check for foreign objects falling into the motherboard between the components. If the dismantling chassis, the conductive material accidentally fall into the motherboard components stuck in between, it could lead to "protection fault." In addition, check the motherboard and the chassis backplane installed between it and a small board for the support of small copper pillars; whether the motherboard installed improperly, or chassis deformation, leaving the motherboard in direct contact with the chassis, so that short-circuit protection with automatic power cut off power supply.

Motherboard failure and Maintenance Basics

Check the motherboard battery: If the computer does not boot correctly to find the hard disk, system time is incorrect after boot, CMOS settings can not be saved, it can first check the motherboard CMOS jumper, the jumper changed to "NORMAL" option (typically 1-2) and then re-set. CMOS jumper if it is not wrong, it is likely because the motherboard is damaged or the battery voltage of the battery shortage caused, please try from another motherboard battery.
Check the motherboard Northbridge chipset cooling effect: some brand-name motherboard heatsink on the Northbridge chip, dispense, and this may result in chip cooling ineffective, resulting in system operation some time after the crash. Encountered such a situation, self-made heat sink can be installed, or add a cooling effect of a good chassis fan.
Check the motherboard capacitors: aluminum electrolytic capacitors on the motherboard (usually around the CPU socket) internal use of the electrolyte, due to time, temperature, quality and other reasons, make it happen "aging" phenomenon, which will lead to anti-motherboard interfere with the decline in the impact indicators of machine work properly. We can buy with the "aging" the same size capacitor, ready for electric iron, solder wire, rosin, will be "aging" can be replaced.
Double-check all the motherboard plugs, sockets is skew, resistance, capacitance pin is touching the surface is scorched, the chip surface is cracking, copper foil is blown on the motherboard; touch the surface of some chips, if the abnormal burning can for a chip to try; encountered areas of doubt, with the amount of about multimeter.

2, dust France

The larger board is gathering dust and more places. Dust can easily lead to poor contact socket and the board In addition, a number of add-in cards on the motherboard, chip pin form, often because of poor contact pin-oxidation.
Proposed to use wool brush to gently brush the dust on the motherboard must be careful not to force too much or move too fast in order to avoid the surface patches Pengdiao motherboard components or loosening of components, which result in cold solder joint. Note clear CPU slot is used to detect CPU temperature, or the motherboard inside the chassis used to monitor the temperature of the dust on the thermal resistance, otherwise it will cause the motherboard to the temperature of recognition errors, which lead to board fault protection. If it is oxidation caused by poor contact pin socket, you can have the hardness of folded white paper (smooth surface, and that for the outside), insert the tank back and forth polished; for the card pins can be used an eraser to the surface oxide layer, and then re - plug.

3, check whether there are short-circuit motherboard

In what should be measured prior to power on the motherboard whether there is short circuit, to avoid accidents. Judging methods are: measuring the power chip resistor between the pin and the ground. The power plug is not inserted, the resistance should normally be to 300Ω, the minimum should not be less than 100Ω. Test-retest about reverse resistance values, slightly different, but not too much difference. If the positive and negative or close to the resistance of a small turn-on, it shows a short circuit occurs the motherboard.
Motherboard short circuit reason may be that the motherboard is damaged, the resistors and capacitors, or have conductive debris, it could be the motherboard being the breakdown of the chip. To find out the breakdown of the chip, you can power-measurement of the power plug. Generally measured power supply +5 V and +12 V. When they find out too much of a voltage deviation from the standard, you can cut through the separation or some lead, or unplug some chips test-retest voltage. When cut a certain wire or unplug a piece of silicon, if the voltage becomes normal, then this leads to the component lead or pull down the chip, that is, failures.

Motherboard failure and Maintenance Basics

4, plug exchange

This method can determine the failure is on the motherboard, or in the I / O device? That is, the same type plug-in board, or chip exchange, and then the changes in the phenomenon of failure to determine failures. It is mainly used for easy plug maintenance environment, such as memory, self-test error, exchangeable same memory chip or memory to determine the cause of troubles.
To do so: First off, and then pull out the plug-in board-by-block; each pulled out a sheet on the observation of the machine start running, once pulled out a piece, the board is running normally, then the plug-in board is faulty, or the corresponding I / O bus slots and the load circuit fault; if it pulled out all the plug-in boards, the system not boot normally, then the fault is likely on the motherboard.

5, static / dynamic measurement method

Static measurement: Let the board be suspended in a close-up mode, according to the logical principle of the circuit or chip output and input of the logical relationship between the use multimeter or logic level pen measuring the relevant points to analyze and judge the cause of troubles.
Dynamic Measurement and Analysis of Law: the preparation of specific procedures or artificial assertion normal conditions, the machine is running, measured with the oscilloscope to observe the waveform components, and compared with the normal waveform in order to determine fault location.
As the control logic on the motherboard increasingly integrated, so its logical correctness, has become very difficult to determine by measuring. Recommend that you first determine the relationship between the logic chip and a simple resistance-capacitance components, and then focused on the logical relationship failure is hard to determine the large-scale integrated circuit chips.

6, program testing method

The Act is mainly used for checking a variety of interface circuits, as well as a variety of circuit parameters with the address whether there is fault, its principle is to use the software to send data, commands, through reading the line status, and a chip (such as the register) state, to identify the fault site.
To use this method, your CPU and the bus must be running normally, be able to run the diagnostic software that can run the installation on the I / O bus slots on the diagnosis of cards. You can use the random diagnostic procedures, special maintenance diagnostics card, or on the basis of technical parameters (such as interface address), specific diagnostic procedures to support self-compiled hardware maintenance. However, you write the diagnostic procedures to be strict, comprehensive and focused, enabling emergence of certain key parts of a regular signal, able to carry out repeated tests occasional failure, it will show an error of record.